

PATENT ABSTRACTS OF JAPAN

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(54) HIGH-POWER ZOOM LENS

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a zoom lens which has a wide angle, a large zoom ratio, and various aberrations made excellent by using a positive lens for a 4th lens group counted from an object side among the lens groups of 5-group constitution, compensating zooming and focusing by the movement of the 4th lens group, and satisfying specific conditional formulae and making the power distribution of the respective lens group excellent.

SOLUTION: This zoom lens has the positive-negative-positive-positive constitution. When the zoom lens is zoomed, the 1st, 3rd, and 5th lens groups G1, G3, and G5 consisting of lenses L1-L3, L7 and L8, and L10 and L11 are fixed and the 2nd and 4th lens groups G2 and G4 consisting of lenses L4-L6, and a lens L9 are made movable; and the focal length of the whole system is varied by moving the 2nd lens group G2 in the direction of the optical axis and variation of the image formation position and a shift in the image formation position based upon variation in object distance are corrected by moving the 4th lens group G4 along the optical axis. Here, the conditional formulae of $-0.2 < f_2/f(fw.ft)^{1/2} < -0.5$, $1.1 < f_3/(fw.ft)^{1/2} < 1.4$, $0.4 < f_3/f_1 < 0.7$, and $6.0 < f_5/f_3 < 7.0$ are satisfied.



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